

535358

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/047162 A1

(51) International Patent Classification⁷: **H01L 21/31,**
21/76

WHITSITT, Elizabeth, Anne [US/US]; 806 Lamonte
Lane, Houston, TX 77018 (US).

(21) International Application Number:
PCT/US2003/037012

(74) Agents: **WATKINS, Marcella, D.** et al.; Conley Rose,
P.C., P.O. Box 3267, Houston, TX 77253-3267 (US).

(22) International Filing Date:
18 November 2003 (18.11.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/427,392 19 November 2002 (19.11.2002) US

(84) Designated States (*regional*): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*):
WILLIAM MARSH RICE UNIVERSITY [US/US];
6100 South Main, Houston, TX 77251-1892 (US).

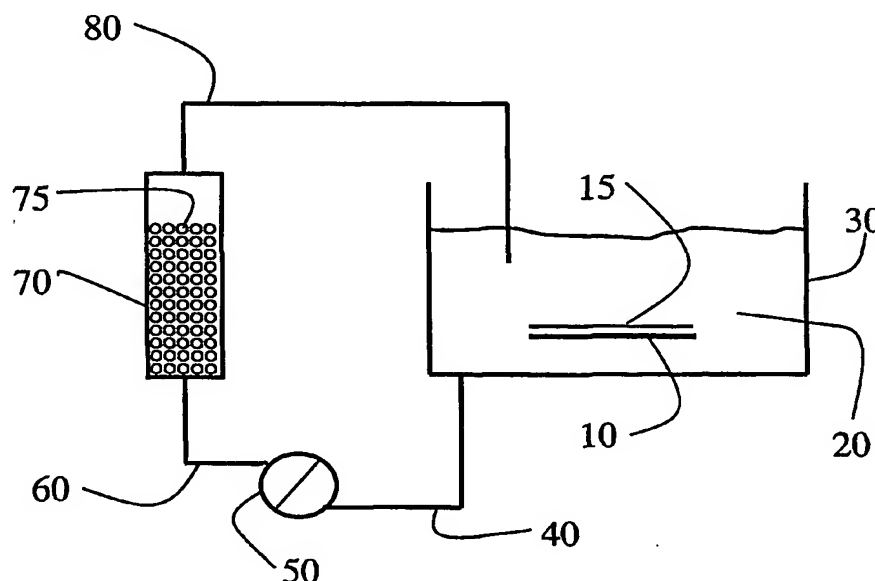
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **BARRON, Andrew,**
R. [GB/US]; 241 Asbury, Houston, TX 77007 (US).

Published:
— with international search report

[Continued on next page]

(54) Title: METHOD FOR LOW TEMPERATURE GROWTH OF INORGANIC MATERIALS FROM SOLUTION USING CATALYZED GROWTH AND RE-GROWTH



(57) Abstract: The present invention involves a method and apparatus for depositing a silicon oxide onto a substrate from solution at low temperatures in a manner that produces homogeneous growth of the silicon oxide. The method generally comprises the following steps: (a) Chemically treating a substrate to activate it for growth of the silicon oxide. (b) Immersing the treated substrate into a bath with a reactive solution. (c) Regenerating the reactive solution to allow for continued growth of the silicon oxide. In another embodiment of the present invention, the apparatus includes a first container holding a reactive solution, a substrate on which the silicon oxide is deposited, a second container holding silica, and a means for adding silica to the reactive solution.

WO 2004/047162 A1